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PRESS SUMMARY OF AGENDA 21

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INTRODUCTION

Agenda 21 is a comprehensive programme of action to be adopted by Governments at the United Nations Conference on Environment and Development (UNCED), known as the Earth Summit. It provides a blueprint for action in all areas relating to the sustainable development of the planet, from now into the twenty-first century.

The Agenda calls for changes in the economic development activities of all human beings -- changes that are based on a new understanding of the impact of human behaviour on the environment.

The draft proposals for Agenda 21, not yet finalized, will be considered at the Fourth Session of the Preparatory Committee for UNCED when it meets in New York from 2 March to 3 April 1992.

Discussion on the proposals began at the last session of the Committee, held from 12 August to 4 September 1991 in Geneva. Those appearing in square brackets ([ ]) have been introduced but not yet agreed to. All proposals in this draft text of Agenda 21 are subject to change. A final text will be adopted at the Summit, which will be held in Rio de Janeiro, Brazil, from 1 to 12 June 1992.

Underlying Agenda 21 is the notion that humanity has reached a defining moment in its history. We can continue with present polices that are perpetuating disparities within and between countries; increasing poverty, hunger, sickness and illiteracy worldwide; and causing the continuing deterioration of the ecosystems on which we depend to sustain life on earth.

Or we can change course, bringing improved living standards for all, more productive and better-protected ecosystems, and a safer, more prosperous future. "No nation can achieve this on its own," notes the UNCED secretariat in its overview of Agenda 21. "Together we can -- in a global partnership for sustainable development." (Document A/CONF.151/PC/100/Add.1)

This press summary is not an official document but is intended to assist journalists in becoming acquainted with proposals Governments are being asked to consider. It was prepared by the Communications and Project Management Division, Department of Public Information, as part of the United Nations information programme for UNCED.

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INTERNATIONAL ECONOMIC POLICY TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES

(Section I, Chapter 1 of Agenda 21; document A/CONF.151/PC/100/Add.3)

Policies that control **trade** and the flow of global finances have a major impact on sustainable development. Agricultural products and other commodities are among the most important income sources for developing countries. They are also among the products most protected by trade policies in developed countries.

Agenda 21 proposals in this area aim to promote development through trade and economic policies. Domestic policies in developing countries to build trade, expand processing, improve marketing and encourage diversification should be supported. The international trading system should reduce tariffs and phase out non-tariff barriers to trade (which affect almost 30 per cent of the exports of developing companies).

The relationship between environment and trade should be clarified in order to make them mutually supporting and to encourage international productivity and competitiveness. Environmental concerns should not be used as an excuse for restraining trade.

Investment in developing countries is essential for economic growth; external debt is a detriment. An increase of **official development assistance** (ODA) to 0.7 per cent of gross domestic product (GDP) is proposed. A programme for reducing **external debt** would involve a one-time payment of $28.5 billion to private and multilateral creditors, an annual interest rate subsidy of $2 billion, and a write-off of $80 billion by bilateral official creditors.

Macro-economic conditions that encourage sustainable development should be encouraged, including: stabilizing real rates of interest and key exchange rates; encouraging global and domestic savings; and removing barriers caused by bureaucratic inefficiency, unnecessary controls and neglect of market conditions.

In addition, steps should be taken to: reduce obstacles to entrepreneurship such as unnecessary regulations, restrictions and formalities; promote the investment necessary for environmentally sound and sustainable development; develop efficient tax systems and financial sectors; and provide technical assistance to developing countries on economic policies.

Estimated costs of proposals on trade and finance are as follows.

- Promoting development through trade would cost $113 million annually beyond current expenditures for expanded commodity agreements, technical cooperation and infrastructure development. Compensation for shortfalls in commodity export earnings for developing countries between 1985 and 1989 would add $8.7 billion for each of those years.
- Increasing ODA to 0.7 per cent of GDP would double current levels, from $55 billion to $110 billion annually.
- Technical cooperation on macro-economic policies would cost $50 million annually.

POVERTY, CONSUMPTION PATTERNS, DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

(Section I, Chapters 2-4 of Agenda 21; document A/CONF.151/PC/100/Add.2)

The combined forces of poverty, wasteful consumption and rapidly-growing population must be brought under control to make sustainable development a reality. Proposals in Agenda 21 for this topic focus on providing jobs, conserving resources and developing information and education programmes.

There is no easy cure for **poverty**. The need for development programmes that provide employment in areas such as reforestation and conservation is stressed. Greater access to land and credit, and improved infrastructure, marketing and technology would further promote sustainable development.

Information systems are proposed to identify specific areas and groups living in poverty and target them for long-term development.

Wasteful consumption of resources produces another kind of environmental stress: the use of more and more energy and raw materials without regard for the future.

Identifying what kind of consumption is and is not sustainable (and educating the public) is one step. Developing countries must avoid replicating the wasteful patterns of industrialized countries.

Technology that permits the efficient use of energy should be developed and made available to developing nations. Recycling and eliminating wasteful packaging are other steps.

Lifestyle changes are difficult to achieve, but educating individuals to make environmentally sound purchases through labelling and information programmes is a starting point.

Pricing incentives, such as including environmental costs or taxes in product prices, could be a powerful tool for reducing wasteful consumption. Government purchasing practices should be examined for environmental impact. Cultural changes that promote the values of durability, permanence and sustainability are a long-term goal.

Population (along with consumption and technology) is a major factor in environmental change. Rapid population growth produces demands for natural resources, employment, education and social services.

Natural resources and living standards are often the casualties of population growth. The impact of population on environment and development issues should be further analyzed. Human vulnerability in sensitive areas should be determined. Some 60 per cent of the world's population lives in coastal areas that could be vulnerable to flooding in the event of climate change.

It is proposed that population factors be thoroughly researched and incorporated into national planning, policy and decision-making. International education on the urgency of population issues should also be improved.

Other proposals include: enhancing reproductive health programmes and services; providing universal access to family planning services and safe contraceptives; directing education programmes at both men and women; and encouraging voluntary migration to decrease pressure on areas in crisis.

The annual cost of proposals to combat poverty is roughly estimated at $30 billion, with $15 billion to come from international sources. An additional $50 million annually would be required to strengthen international organizations.

Population proposals under Agenda 21 are estimated to cost $7 billion annually from 1993 to 2000 (half to come from international sources), plus about $6 million annually to strengthen international institutions.

HEALTH AGENDA STRESSES UNIVERSAL CARE, ENVIRONMENTAL HAZARDS

(Section I, Chapter 5 of Agenda 21; document A/CONF.151/PC/100/Add.5)

Proposals in Agenda 21 address the impact on health of pollution and urban poverty, primary health care and the control of communicable diseases. The needs of infants and children, youth and women are emphasized.

By the year 2000, every country should incorporate **environmental health** considerations (including assessments of the impact of pollution) into its development policy. Factors include noise pollution, radiation and waste from factories and power plants. Technology and infrastructure are needed to monitor air and water quality; anti-pollution laws must be enacted and enforced; hygiene programmes have to be introduced to protect industrial workers.

Indoor smoke from wood fires and coal stoves is a major health hazard for millions in developing countries. Economic incentives and education campaigns should be used to get people to switch to healthier methods of cooking and heating their homes.

To counter the effects on city dwellers of pollution, poverty, poor diets and inadequate housing and services, more intensive municipal health efforts are proposed. The goal is a 10-40 per cent improvement in urban health indicators by the year 2000, including reductions in respiratory diseases, tuberculosis and meningitis.

Accomplishing this will require better assessment of the health and environmental impact of urban conditions, using data on variations in disease rates. Programmes should promote community involvement, public education and collaboration among various agencies.

Making **primary health care** available to everyone is a key aspect of alleviating poverty. Standards of care for those now receiving poor or moderate services and specialized care for environmentally related problems should be increased. Access to affordable health equipment and facilities that communities can maintain on their own is an important factor.

Environmental measures (including the provision of clean water and sanitation) are key to controlling many communicable diseases. An estimated 15 million infant and child deaths per year are from preventable causes.

By the year 2000, the United Nations aims to eliminate guinea worm, polio and measles, and to contain leprosy and river blindness; to reduce childhood diarrhoea by 50 per cent and related deaths by 70 per cent; and to ensure that 95 per cent of children have access to care for acute respiratory infections.

All countries should by then have programmes to counter malaria and parasitic infections. Health education will be a key part of all these efforts.

A rapid increase in AIDS cases will strain health care resources in many developing countries in the next few years. Proposals call for the mobilization of all countries to prevent HIV infection and lessen the social impact of the disease.

Protecting those whose health is most vulnerable to environmental and social factors is stressed. For infants and children, the focus includes immunization, nutrition and adult education in disease prevention and treatment (oral rehydration therapy for diarrhoea). Legislation against exploiting children sexually or in the workforce is proposed. For people under 25, counselling services to address substance abuse, unwanted pregnancy and sexually transmitted diseases are advocated.

The estimated annual cost of these health proposals is $49.9 billion, with $8.4 billion per year to come from international sources.

PROMOTING SUSTAINABLE HUMAN SETTLEMENTS

(Section I, Chapter 6 of Agenda 21; document A/CONF.151/PC/100/Add.7)

By the year 2025, 60 per cent of the earth's population will live in cities. Degradation of the environment and human living conditions is already seen in cities, particularly in developing countries. Cities also generate 60 per cent of gross national product worldwide, and can develop the capacity to sustain their productivity.

Proposals in Agenda 21 focus on planning and management methods that will meet the housing, water, sanitation, safety and waste management needs for billions of people. They include:

-- Creating national strategies for providing shelter.
-- Forming an international network of trained urban managers equipped to plan for human, environmental and infrastructure demands.
-- Easing migration pressures on cities by creating employment opportunities in rural areas.
-- Taking inventory of land resources and structuring land-use plans to reflect the needs of all

population segments.

- -- Establishing an international programme focusing on urban water, sanitation, drainage and solid waste management problems, to be called the Settlement Infrastructure and Environment Programme (SIEP). Pilot programmes will be funded by existing international organizations. Successful programmes will be replicated worldwide.
- -- Focusing energy use and mass transportation. Most energy consumption takes place in cities; transportation accounts for 60 per cent of oil-based fuel use.
- -- Reducing the impact of natural disasters (three million people have been killed in the last two decades) through education, risk research and planning. Natural disasters also cause some $30 to $50 billion in damage each year.
- -- Examining techniques used in the construction industry in order to reduce environmental impact, provide for employment and meet needs for shelter. Use of local materials, energy-efficient technology and labour-intensive methods are called for. Bulk purchases of materials could reduce housing costs for small-scale builders and communities.

Solutions to problems caused by human settlements are linked to issues of energy, air and water on a global scale. Agenda 21 proposals on air, water and energy all apply to human settlements.

The concentration of people in urban areas presents additional planning and management problems. Developing countries are short of expertise in housing, land use planning, management, energy, infrastructure, construction, transportation and pre-disaster planning and reconstruction. They often lack policies that can connect public, private and social sectors and the institutions to provide training.

International organizations and funding sources should provide both human and financial resources. Traditionally, funding for human settlements has been low.

Development projects in urban areas produce high levels of public and private investment. For each $1 spent on technical cooperation for human settlements in 1988, the United Nations reports, there was $122 of public and private follow-up investment.

To provide adequate shelter would require about $75 billion annually, with some $10 billion needed from sources outside individual countries. Improvements in infrastructure would require an estimated $100 billion annually ($15 billion in financial and technical assistance to come from outside sources).

Land-planning and management efforts would cost about $3 billion annually ($300 million from the international community). The SIEP annual budget is projected at $50 million. Disaster reconstruction expenditures are currently about $600 million annually, with an additional $50 million required for education and research devoted to prevention.

Improving construction technologies would require about $4 billion annually from the international community in addition to over $400 billion currently spent by private sources. Developing human resources would require some $60 million in international technical assistance. Strengthening international organizations for an expanded role would cost an additional $37 million. The costs for specific proposals on air, fresh water and energy are included in those Agenda 21 items.

POLICY-MAKING FOR SUSTAINABLE DEVELOPMENT

(Section I, Chapter 7 of Agenda 21; document A/CONF.151/PC/100/Add.8)

Countries can no longer afford to make decisions without considering environment and development issues at every step of the planning process. Agenda 21 proposes economic, legal and self-regulatory methods for ensuring that environment and development issues are kept in the forefront and integrated with economic and other factors.

National policy-making should make better use of environmental information to anticipate the consequences of development, rather than confront the environmental consequences after they occur. Assessments should be made of environmental costs, benefits and risks associated with programmes. Policies should encourage changes in patterns of production, use of technology and consumption, and be flexible enough to accommodate multiple goals and changing needs.

Proposals advocate delegating planning and management to the lowest possible levels and using traditional or indigenous methods of managing natural resources wherever possible. Laws and regulations dealing with environmental issues are often ad hoc and inadequate. Developing countries (some still with colonial-era laws) need assistance to draft effective legislation and to comply with international agreements.

Proposals stress incentives and other market-oriented methods for improving environmental behaviour. Producers and consumers should become accustomed to paying the environmental costs of decisions. The aim is to reverse the tendency to treat air, water and other natural resources as "free".

Proposals include removing subsidies that encourage environmentally unsound actions; creating markets in pollution control; and taxing resource consumption and environmental degradation. The introduction of accounting systems that integrate environmental and developmental considerations into economic management is encouraged.

The annual cost of implementing these proposals is estimated at $63 million.

PROTECTING THE ATMOSPHERE: MAKING THE ENERGY TRANSITION

(Section II, Chapter I of Agenda 21; document A/CONF.151/PC/100/Add.14)

To protect the atmosphere and the air on which human life depends, proposals for Agenda 21 focus on energy production and consumption as action areas.

Early in 1992 two events again highlighted the problem. Depletion of ozone over the northern latitudes was found to be creating a hole in the atmosphere similar to the one discovered over Antarctica. At the same time, the largest city in the world was partially shut down by air pollution that reached hazardous levels.

Agenda 21 proposals include:

-- Promoting sustainable energy development.

-- Promoting safe and environmentally sound transport systems.

-- Promoting industrial development that does not adversely impact the atmosphere.

-- Promoting agricultural (and forestry) development that does not adversely impact the atmosphere [promoting sustainable resource development and land use].

-- Promoting sustainable energy consumption patterns and lifestyles.

-- Addressing uncertainties [becoming assured of the scientific basis for decision making].

-- Preventing stratospheric ozone depletion.

Most fuels used today to produce **energy** for human consumption are not sustainable. They are not likely to be abandoned soon, but improvements can be made in energy efficiency while making a long-term transition to environmentally (safe and) sound energy systems (ESES).

Agenda 21 proposes several possible steps:

-- National energy planning that would take into account environmental costs and set goals for a transition to ESES.

-- Increased funding for research on sustainable energy sources.

-- Setting efficiency and emission standards.

-- Regional energy planning, where possible.

-- Taxes on pollutants, particularly carbon.

-- Where appropriate, increased use of firewood and other biomass fuels.

-- A "Global Energy Efficiency 21" project to increase technical cooperation worldwide.

Burning fossil fuels for **transportation** is one of the major sources of atmospheric pollution. Agenda 21 proposals include creating new fuel performance and emission standards, developing economic incentives for energy efficient vehicles, promoting mass transit and convening a United Nations conference on sustainable transportation.

Industrial development is essential. Industry is a major user of fossil fuel and a substantial producer of greenhouse gases and air pollution. It is also a principal user of chloroflourocarbons (CFCs), a cause of ozone depletion. Proposals focus on increasing energy efficiency, improving pollution abatement technology and factoring pollution costs into product costs.

Agricultural and land-use practices both influence and are influenced by atmospheric factors such as climate change and air pollution. Preservation of forested areas (which act as "sinks" for greenhouse gases) is one aspect. Plants convert carbon dioxide into oxygen through photosynthesis. Reforestation, improvement of degraded land and reductions in emissions from forest burning are proposed. Also suggested is long-range planning to account for the possibility of climate change and the resulting impact on forests, agriculture and coastal areas.

Excessive consumption of energy, particularly in developed nations, is often a matter of individual lifestyle rather than necessity. Proposed are:

-- Government policies to discourage excessive consumption of non-essentials and incorporate health and environmental costs into product costs.

-- Systems to be established by developing countries for determining how much energy is necessary to meet their basic needs and energy plans to meet them.

-- Systems to be established by developed countries for determining how much energy use is required and managing demand.

Atmospheric issues are global issues. Pollution, ozone depletion and climate change do not recognize boundaries. Proposals include strengthening global monitoring and information-sharing on atmospheric issues.

Ozone depletion exposes huge populations to health risks caused by an increase in the sun's ultraviolet rays reaching earth. Reducing man-made chloroflourocarbons (CFCs) and halons released into the atmosphere is essential. CFCs and halons should be phased out completely by 2030 to return, by the year 2050, to conditions that existed before the ozone hole opened up over Antarctica. All nations must ratify and financially support the Montreal Protocol and its amendments.

Annual costs during the 1990s for implementing Agenda 21 proposals for atmospheric protection are estimated at:

-- Sustainable energy development: $10 billion from the international community. Energy investments by developing countries are projected at $120 billion annually during the period.
-- Transportation: costs may emerge from the proposed conference on transportation.
-- Industrial development: $25 billion per year with about a half billion coming from the international community.
-- Agriculture: costs are shown in other portions of Agenda 21.
-- Energy consumption: $2.5 million for developing use indicators.
-- Monitoring and information: $1.35 billion from international sources.
-- Ozone programme: up to $500 million per year.

In addition, about $100 million would be required to strengthen international organizations.

AN INTEGRATED APPROACH TO LAND-RESOURCE USE

(Section II, Chapter 2 of Agenda 21; document A/CONF.151/PC/100/Add.15)

Protecting the future demands that we make optimal use of the land and its resources. This requires simultaneous consideration of all aspects of the environment and social and economic development. To augment action on specific resource-use issues, the integrated management of soils, minerals, air, water, and plant and animal life is also proposed. Governments need assistance to make choices that will minimize conflict and get the most sustainable benefits from the land.

Institutions should be strengthened so that an integrated approach can be used at all stages of decision making, from goal-setting to implementation. Legislation, regulations and economic incentives should encourage the rational use of land. Programmes should be planned for an entire ecosystem or watershed area.

Research is needed to determine the capacity of land, and on the interactions among various land uses and environmental processes. Pilot projects should experiment with new methods of land management. Regional and international sharing of information and experiences is encouraged.

To promote a high degree of popular participation in decision-making, environmental awareness campaigns and the incorporation of resource issues into educational curricula are encouraged. The involvement of previously excluded groups -- women, children, indigenous peoples and local communities -- is a priority.

It is estimated that about $50 million a year will be needed to provide governments with technical support in developing integrated land-resource management.

CONSERVATION AND RATIONAL USE OF FORESTS

(Section II, Chapter 3 of Agenda 21; document A/CONF.151/PC/100/Add.16)

Forest resources are essential to both development and the preservation of the global environment. Using them rationally can create employment, help alleviate poverty and provide a valuable range of products.

Mismanagement of forests is linked to degradation of soil and water, loss of wildlife and biological diversity, and pollution and global warming. Proposals for Agenda 21 focus both on conservation and on the rational use of forests and tree-based resources.

Each year some 17 million hectares of tropical forests are lost as a result of agricultural and industrial expansion, overgrazing, excessive or poorly managed tree-cutting for lumber or fuel, and similar human pressures. Meanwhile, air pollution and fires are depleting the wooded lands in many developed countries. This loss of forests also accelerates other environmental problems, lowers the quality of life for millions of people and reduces countries' options for development.

A holistic approach to forest conservation and development must address other issues: population pressures, unsustainable agricultural and industrial practices, land ownership, employment opportunities and external debt. Policies to address these problems must be coordinated internationally and regionally.

Maintaining and expanding wooded areas involves protecting existing forests as well as planting new ones. Governments -- joined by the private sector, national organizations and community groups -- should undertake a variety of activities:

- Better forest management, involving harvesting trees in a planned, sustainable fashion as well as rehabilitating degraded natural forests.
- Establishment and expansion of national parks, to protect old-growth forests, wildlife and genetic resources.
- Protective planting of trees and other vegetation in bare and arid lands, mountain areas and degraded farm lands.
- Expansion of industrial tree farms.
- Increased prevention of forest fires as well as protection against pests and diseases.
- Urban forestry to protect parks, old trees and groves.
- Involvement of women, youth and local communities in formulating and developing forest-related programmes.

Forest resources are renewable if managed conservatively. Development that is sustainable will require actions to raise the value and yield of a variety of forest products. This will increase employment and income, foreign exchange earnings and return on investments.

Governments, the private sector and the international community need to support research and other activities to promote:

- Improved efficiency and waste reduction in harvesting and processing wood and other forest products.
- Greater use of non-wood products like medicinal plants, dyes, fibres, gums, resins, fodder and cultural items.
- The use of products derived from lesser-known species in the forests.
- Rational wildlife farming (for food, hides, skin, bones and horns), small-scale forest enterprises and eco-tourism, to increase rural incomes without causing ecological damage.

Much basic information about forest resources needed to improve management has not been compiled. New efforts are needed to determine the extent and quality of forests, harvest volumes, the impact of various activities and programmes, and availability of land for tree planting. New systems for planning and monitoring forest use must be created.

Internationally, more research is needed on the relationship of forests to carbon storage, changes in climate and greenhouse gases. A new forest research institution is proposed.

Existing international structures for funding and coordinating forest development should be strengthened or revamped. A new International Fund for Forest Conservation and Sustainable Development (or Green Fund) is proposed in order to facilitate financial assistance to developing countries.

The transfer of forest-related technology from developed to developing countries, and technical and economic cooperation among developing countries, are also proposed.

International terms of trade that are compatible with sustainable forest management in developing countries must be established if sustainable development is to be realized globally. International laws relating to trade in forest products and the role of transnational corporations in forestry need to be refined.

Between 1993 and 2000, an annual investment in developing countries of some $32 billion will be required to implement these proposals. Current investment is estimated at about $15 billion. Most funding is likely to come from private sector or government investments; international assistance will be an essential catalyst.

HALTING THE SPREAD OF DESERTS

(Section II, Chapter 4 of Agenda 21; document A/CONF.151/PC/100/Add.17)

The over-use of marginal land for farms and livestock causes a cycle of desertification and poverty. Halting the spread of deserts will require actions to protect areas that are still viable and to restore degraded lands.

To combat desertification, improved land and water use and reforestation are being proposed. Increased research and the provision of alternative livelihoods for subsistence farmers and herders are also needed. More emphasis should be placed on preparing for drought emergencies.

Desertification affects one fourth of the earth's land area and one sixth of its people. Preventing further loss of productive land to deserts should be the first priority. In regions where rainfall is scarce, some 1.2 billion hectares of rangeland are still productive, as are 340 million hectares of farmland (100 million hectares of this are irrigated).

By the year 2010, environmentally sustainable techniques should be used in agriculture and grazing, as well as better management of water resources, protection of existing vegetative cover and extensive planting of new forests.

Corrective measures in areas that are moderately desertified should be the second priority. These areas comprise 1.2 billion hectares of rangeland and 215 million hectares of farmland (35 million hectares of which are irrigated).

Farmers and herders should be trained and efforts made to ensure that land-users are actively involved in land conservation. The condition of soil and plant cover should be studied and the economic and social consequences of land degradation determined. Research should be done to ascertain the interaction between climate, drought, desertification and methods of increasing water retention in the soil. Indigenous knowledge of forests and vegetation should be incorporated into national studies.

In order to alleviate the poverty that is associated with unsustainable land use in arid regions, support for rural cottage industries and other alternatives to subsistence farming and livestock herding is advocated. Changes in land tenure and population policies should be made, and the property rights of women and nomadic groups should be protected.

Drought in sub-Saharan Africa led to the deaths of some 3 million people in the 1980s and caused millions more to become refugees. Drought-preparedness measures should include: early warning systems; contingency crop-planting linked to weather forecasts; and strategies for importing, storing and transporting food in emergencies.

The total annual cost of proposals to halt desertification and prepare for drought is estimated to be $6.7 billion; nearly $3 billion in international financing will be required.

PROTECTING MOUNTAIN ECOSYSTEMS

(Section II, Chapter 5 of Agenda 21; document A/CONF.151/PC/100/Add.18)

The rapid deterioration of mountain ecosystems threatens the planet's biological diversity and the well-being of many people. Proposals focus on halting erosion and replanting damaged areas, making natural disaster plans, and offering alternative employment to people whose livelihoods are linked to harmful environmental practices.

Mountains are a vital source of water, energy, minerals, forest and agricultural products, and recreation. All are threatened by environmental degradation. As a result, increasing poverty and poor health confront those who live in mountain regions -- about 10 per cent of the world's people -- and those in adjacent watershed areas -- about 40 per cent of global population.

Soil erosion and landslides jeopardize farming in the South American Andes. In the mountains of Asia and Africa, population growth has led to environmentally destructive cultivation of marginal lands, accompanied by excessive livestock grazing and deforestation.

Proposals seek to ensure the appropriate use of land by the year 2000, to prevent erosion and maintain ecological balance. National environmental programmes should support local management of farming, animal husbandry and forestry; provide incentives for farmers to practice conservation and use environmentally friendly technologies; and create parks and other areas for the protection of wildlife and biological diversity. Local people, including women, should be provided with alternative and varied means of earning income. These might include crop diversification, poultry raising, beekeeping, fisheries and village industries.

Mountain disasters and floods should be planned for. Environmental conditions need to be monitored, and regional cooperation and information exchanges increased. A global survey of crop, plant and animal genetic resources in mountain areas should be undertaken.

The estimated annual cost of proposals in this area of Agenda 21 is $13 billion, $1.7 billion of it from international sources.

MEETING AGRICULTURAL NEEDS WITHOUT DESTROYING THE LAND

(Section II, Chapter 6 of Agenda 21; document A/CONF.151/PC/100/Add.19)

Feeding an expanding world population will require a combination of increased food production and land conservation. Proposals suggest: improving farm planning and management, with greater input from farmers; raising the output of food and other farm products, without depleting nutrients or poisoning the soil; and maintaining the diversity of plant and animal species.

World food needs are projected to increase 50 per cent by the end of this century and to triple by 2050. To feed the vast majority, who live in developing countries, land now in use will have to yield more, and land that has been degraded will have to be rehabilitated and protected.

In many countries, annual population growth exceeds 3 per cent, and food production already lags behind demand. Agricultural production in these countries should be increased by at least 4 per cent a year, without destroying the land's fertility or polluting the water. Techniques to accomplish this are already available but are not applied widely or systematically.

Increasing returns from land that is currently the most productive is emphasized, but the improvement of less valuable land is also proposed. Storage and distribution practices should be more efficient.

As farming becomes increasingly specialized, market-oriented and dependent on chemicals, farmers become more vulnerable to environmental stresses and price fluctuations. Farming practices should be diversified and land and other resources used properly. Farmers should be informed about crop rotation and other methods of conserving soil nutrients. The use of organic manure and other techniques to reduce reliance on chemical fertilizers should be encouraged.

Biological means of controlling insects, and the use of plant species that resist pests, are better long-term options than the present reliance on chemicals, which are costly and harmful to human health and the environment.

Steps to safeguard the diversity of species used in farming must be taken. Some indigenous plants and animals are disease-resistant or uniquely adapted to local conditions. Animal species are often threatened by the introduction of new breeds, cross-breeding and other changes in livestock production.

More research, data collection and special planning is required to determine the potential of particular species for food production and to protect endangered ones. Plant conservation areas and seed banks are needed, as are facilities for storage of animal semen and embryos.

Erosion, salinization, waterlogging and soil pollution are consequences of harmful farming practices. Increasing farm yields depends on reversing this land degradation. Well-planned national and regional zoning and management measures will be required, as well as, more immediately, rehabilitation of the most critically affected and vulnerable areas.

Social and economic practices, such as land tenure and agricultural pricing structures, that lead to improper land use should be altered. Where farming cannot be intensified, other forms of rural employment should be promoted, including cottage industries, light manufacturing, food processing, fisheries, recreation and tourism.

Efforts to diversify sources of energy used in rural areas should be promoted. In the developing countries, the main sources of energy in rural areas are wood, crop residues and manure. Development will require a cost-effective, sustainable mix of fossil fuel and renewable energy sources, including biomass, solar driers and wind pumps.

Decentralization and popular participation in rural development, especially by women's groups and small farmers, should be encouraged. Equitable access to natural resources, support services, technologies and financing should be ensured. Policies of land ownership, credit, pricing and taxation should provide incentives to the poor.

Developing countries need to have assistance to improve their capability to plan and manage agricultural policy rationally. Proposals recommend coordination of farm and environmental trade policies to prevent protectionism in agricultural markets.

The cost estimate of agricultural proposals under Agenda 21 is $31.8 billion annually (not including farm-related water programmes, which are considered separately), of which $5.1 billion would have to come from international financing.

SUSTAINING BIOLOGICAL DIVERSITY

(Section II, Chapter 7 of Agenda 21; document A/CONF.151/PC/100/Add.20)

Sustaining the diversity of biological species -- plant, animal and insect life -- is a key element in the sustainable development of the planet. Today however, short-term economic development rarely considers conserving biodiversity, and usually works against it.

Proposals in Agenda 21 recognize how little is known about the biological diversity that is found literally everywhere: in farmers' fields, forests, savannas, deserts, tundras, rivers and seas. Often, indigenous people are expert at understanding biological diversity because it is a source of their food, fibre and medicine.

A conservation strategy would involve four major elements:

- Providing information on biodiversity.
- Making the best use of the benefits of biodiversity.
- Improving conservation efforts.
- Building a capacity to manage biological resources and wildlife.

National surveys for **information-gathering** should be undertaken to establish scientific and economic inventories of biological resources. A global network should monitor changes that indicate

problems. Major long-term research programmes on species and habitat should be established. More scientists worldwide should be trained to collect, manage and communicate information on biodiversity. National biodiversity centres, linked to international conservation organizations, should be established.

The **benefits of biodiversity** should be shared. At present, national and international policies, as well as market and accounting practices, do not encourage sharing the benefits. Often they equate economic gain with resource depletion.

Commitments to **conserve biodiversity** should be included in national development policies. This would involve policies on financing, technology transfer, debt, trade and environmental accounting. Local communities and indigenous people would be involved in conservation efforts.

Other proposals include:

-- Developing a system for placing economic value on biological resources.
-- Increasing research on genetic crop and livestock breeding programmes and pharmaceutical products.
-- Establishing international procedures for collecting and transferring resources, including genetic material.
-- Controlling exploitive hunting and fishing.

Conservation should also be achieved by:

-- Establishing a global network of reserves and protected areas, including vulnerable coastal areas.
-- Encouraging the management of private lands as protected areas.
-- Strengthening UNESCO's Biosphere Reserve network.
-- Restoring degraded areas, reintroducing species and developing sustainable wildlife populations through game ranching.
-- Developing and funding a global plan for collecting, evaluating, documenting and conserving genetic resources in zoos, museums, gene banks and similar organizations outside the habitat.

Capacity to manage biological resources and wildlife should be strengthened. There is a need for professional training programmes and more education of indigenous people about the importance of biodiversity.

Other proposals call for: practical outdoor training in protected areas; regional projects involving people with varied skills; and ways to enable local communities to earn benefits from protected areas. Laws relating to using genetic resources should be changed.

Four major initiatives would be implemented between 1993 and 2000, with the following **estimated annual costs**:

-- Information gathering: $200 million, divided between national governments and international organizations. Strengthening international organizations: about $3 million.
-- Spreading biodiversity's benefits: $550 million (from national governments and the international community).

- Conservation measures: $3 billion, divided between national governments and the international community, plus $16 million to strengthen international organizations.
- Improved management: $1 billion, divided between national governments and the international community. About $8 million to strengthen international organizations.

ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY

(Section II, Chapter 8 of Agenda 21; document A/CONF.51/PC/100/Add.27)

Developments in biotechnology can make significant contributions to world health, food supplies and environmental protection. Proposals in Agenda 21 focus on the need for research, education, information exchange and safety.

World population is projected to double from 5 to 10 billion by 2050, with 9 out of 10 people living in developing countries. Advances in biotechnology can help meet present and future needs for:

- Food, by increasing yields and nutritional value of plants, animals and fish. Agricultural output can be improved and made healthier by biological pest controls.
- Fuel, by increasing yields of biomass, the principal fuel in developing countries.
- Health, by improving nutrition and developing treatments and vaccines for genetic and communicable diseases. Safe, reversible and long-lasting fertility-regulating mechanisms are needed and possible.
- Safe water, by detecting hazards such as parasites and pathogens.
- Environmental protection and recovery, by improving yields and providing materials for reforestation and recovery of degraded land. It can also help preserve biological diversity.

International partnerships are needed between industrialized nations which possess technology and developing countries which possess biological resources.

Agenda 21 proposals focus on increasing food productivity, improving health, enhancing environmental protection, enhancing safety and international information exchange, and establishing methods for applying environmentally sound biotechnology.

The proposals identify several action areas: increased funding for research, education and training at all levels but particularly in developing countries; international systems for exchanging information; and international standards and agreements for safety in the research and application of biotechnology.

Total annual costs for managing and enhancing biotechnology from 1993 to 2000 are estimated at $20 billion, with $197 million coming from international funding sources.

SAFEGUARDING THE OCEAN'S RESOURCES

(Section II, Chapter 9 of Agenda 21; A/CONF.151/PC/100/Add.21)

A variety of measures must be taken to preserve the biological richness of oceans and coastal areas, and to ensure that they are used rationally for maximum long-term benefit. Coastal and marine ecosystems should be protected; the over-use of fishing areas in the high seas and within country boundaries should be prevented; and island and low-lying areas should be prepared for flood emergencies and possible effects of climate changes.

Marine and coastal resources are threatened by human activities: fishing, shipping, tourism, urban waste, and pollution caused by industry, agriculture and forestry. Environmental degradation can harm human health and prospects for economic and social development.

Half the world's population lives less than six kilometres from the sea. By 2020, three fourths may reside in this coastal zone, which includes many poor, densely crowded settlements.

People's well-being is closely related to the condition of fragile coastal environments. Hazards include red tides, excessive plant growth in the water due to an over-abundance of nutrients, bacterial contamination, salinization of groundwater, wetlands destruction, and pollution from local and upstream sources.

Environmentally destructive practices in coastal regions should be curbed and damaged areas restored. Programmes should cover development, housing, tourism and fishing policies. Regulations and user fees should control access to fragile zones, and incentives should promote environmentally sound technology. (Proposals concerning sewage treatment, industrial waste and agricultural chemicals are detailed in other sections.)

To conserve **biodiversity,** by the year 2000 there should be established protected areas for vulnerable species and their habitats, including coral reefs, sea grass beds, mangrove forests and places where migratory creatures breed or spawn. Legal steps to protect endangered species should include regulating the introduction of non-indigenous species in aquaculture. There should be increased international and regional policy coordination and sharing of information.

Globally, improved management of coastal areas will cost an estimated $8.6 billion a year, $6 billion in the developing countries.

About 40 per cent of **ocean pollution** comes from rivers, 30 per cent from the atmosphere, and 10 per cent each from dumping and maritime activities. Major pollutants include sewage, agricultural chemicals, synthetic organic compounds, litter and plastics, metals, radioactive substances, and hydrocarbons.

The marine environment should be protected from detrimental practices, not just cleaned up afterwards. Waste should be reduced and recycled; the release of heavy metals into sewage systems should be halted; the use of phosphorous and nitrogen in farming should be limited and run-off controlled; dredging regulated; mining and construction methods that lead to silting halted; production of dangerous organic compounds eliminated; and air pollution curbed.

Low-cost, low-maintenance technology for **sewage treatment** should be used wherever possible. Discharge sites should be located away from shellfishing areas, water intakes and bathing beaches.

Three fourths of the 600,000 tons of oil dumped into the oceans each year is from routine shipping practices, rather than accidental spills. More stringent controls on discharging pollutants in sensitive areas and safer shipping procedures should be instituted. Developing countries should receive financial assistance to build **port facilities** for the collection of garbage, waste oil and chemical residues.

Half the cargo shipped at sea is potentially hazardous to the marine environment. Countries will be called upon to assess the threat, and to make spill contingency plans that use low-cost, locally available materials if possible. Global conventions should be negotiated to control pollution from offshore oil drilling, and from chemicals other than oil; and to restrict the dumping or incineration of dangerous materials at sea.

An estimated $174 million will be needed annually for the sea-based anti-pollution measures proposed in Agenda 21. Estimates of the cost of land-based activities affecting oceans range from $5 billion to $20 billion.

Over-fishing and the degradation of fish habitats are depleting a major food resource. Steps should be taken to maintain fish populations at optimum levels, and to restore and protect endangered species. Fishing methods and equipment used on the high seas and in national waters should maximize efficiency and minimize environmental damage. Harvesting should be avoided during reproductive stages of the life cycle.

National licensing programmes should be used to allocate access to fish resources equitably among commercial (small- and large-scale) and recreational fishers, respecting the rights of community-based groups and indigenous peoples. Developing countries need assistance to promote deep-sea fishing to reduce the use of coastal fisheries.

Countries are urged to protect coral reefs and restore damaged reefs to a productive state. Research should be undertaken, at national institutions and international centres, on fish life cycles, the impact of various pollutants and their circulation in ocean currents, and the resilience of ocean ecosystems under stress.

An estimated $12 million will be needed annually to conserve high-seas living resources. Proposals to restructure the fishing industry will cost up to $6 billion worldwide per year, including $60 million in international funding.

The potential threat to **islands and coastal areas** from flooding and groundwater contamination caused by rising sea levels is also addressed. Improved weather forecasts, other preventive measures, and research into possible climate changes will cost about $700 million a year, of which $370 million is needed from the international community.

Isolated, economically limited and ecologically fragile, islands are rich in unique plant and animal species. Helping them provide a decent living standard while protecting the environment will cost the international community an estimated $50 million a year.

PROTECTING AND MANAGING FRESHWATER RESOURCES

(Section II, Chapter 10 of Agenda 21; document A/CONF.151/PC/100/Add.22)

Protecting fresh water and delivering it to people are vital to human health and development. Agenda 21 contains proposals that link protection of water sources to meeting people's needs for drinking water and sanitation, irrigation of crops and industrial uses.

Water supplies extend beyond national boundaries. A coordinated international approach to protection and management is needed. Fresh water is a finite resource and, in many parts of the world, is becoming increasingly scarce. Human activities are depleting or contaminating supplies. Deforestation, urbanization, and poor farming and mining practices erode soil and cause sedimentation in reservoirs.

Excessive use of agricultural chemicals, acid rain from industrial pollution, dumping of untreated sewage and factory wastes, and over-pumping of ground water all contribute to the problem. All countries should have water-quality monitoring programmes and enforceable pollution standards in place by the year 2000.

Specific proposals for protecting water sources include:

- Having polluters pay for clean-up, on site and downstream.
- Controlling discharges of domestic sewage, drainage water and industrial wastes by using appropriate treatment facilities and low-waste technologies.
- Re-use of waste water for agriculture and aqua-culture.
- Environmental impact assessment of all planned development projects that could affect water quality.
- Rational use of pesticides, herbicides and nitrate fertilizers.
- Safeguarding aquifers against contamination by sea water (due to excessive pumping or ocean-level rise), dumping or landfill seepage.
- Protecting the species that inhabit wetlands, rivers and lakes.

An estimated 80 per cent of all diseases in developing countries and one third of the deaths are related to contaminated water. One person in three in those countries lacks safe drinking water or sanitation services.

Over the past 20 years, international programmes have made significant progress in addressing this problem. But the United Nations estimates that providing access for everyone to water and sanitation by the year 2025 will mean the doubling of current spending levels. Developing lower-cost, community-based means of providing these services is an important goal.

It is proposed that Governments help communities develop and manage their own water and sanitation programmes, paying particular attention to poor rural and urban areas. Educating people about hygiene will play an important role. Other goals include a sharp reduction in water-associated illness by 2025, starting with the eradication of guinea worm disease and river blindness by 2000.

By 2025, 60 per cent of the world's people will live in cities. Urban population growth is endangering water supplies and quality. Provision by the year 2000 of at least 40 litres of safe water

per capita daily to all urban residents, and community sanitation facilities to at least 75 per cent of them, is proposed. Three fourths of solid waste from cities should be recycled or disposed of in an environmentally safe way by that time.

Development of cities should be planned with water resources in mind. The price charged for water should reflect the cost of providing it.

In rural areas, water is crucial to crops, livestock and inland fisheries as well as to human health. Drought brought on by loss of tree cover, flooding due to improper irrigation and soil erosion caused by over-grazing are a few of the environmental hazards.

Irrigation in developing countries should be increased together with drainage to reclaim water-logged lands. The environmental and social impact of new irrigation systems should be determined before being introduced. Small-scale and locally managed programmes should be encouraged.

The possible effects of global warming on water resources is also raised. Rises in sea-level will cause salt to enter freshwater sources and estuaries in coastal areas and islands. Flood-warning systems, desalination plants, levees and drainage channels should be installed to guard against this.

The magnitude of this danger should be studied further. Research is also needed to better understand the connection between deforestation and decreases in rainfall. All countries should design and initiate water programmes by the year 2000, including assessment of water resources and training of technical and management personnel. Data and technology should be better shared among countries if goals are to be met.

Developing countries will need financial assistance. Proposals for water resource protection, sanitation and supply for urban and rural needs will require annual expenditures of some $55 billion between 1993 and 2000; slightly more than half will have to come from international sources.

SAFE USE OF TOXIC CHEMICALS

(Section II, Chapter 11 of Agenda 21; document A/CONF.151/PC/100/Add.23)

Thousands of chemicals are used in construction, industry, food production and agriculture; their improper use severely damages the environment and endangers human health and future generations.

The safe management of chemicals requires collaborative action by Governments, private industry and international organizations, including assessing the dangers of hundreds of chemicals; sharing information about dangers internationally; establishing a consistent system of labelling substances; and promoting safer alternatives to harmful chemical use.

Safety is an important consideration at all stages of the chemical cycle, including manufacture, trade, storage, use and disposal. Awareness of the hazards of chemicals is necessary for safe use. Communities have a right to know the risks of particular substances and processes.

Government policies should support research and practices to replace toxic chemicals with less hazardous substances and alternative clean technologies. In agriculture, reliance on pesticides can be reduced by promoting biological methods of insect control.

Preventing accidents and developing emergency responses are important in locations where chemicals are used or stored. Procedures to clean up and restore damaged areas should be set out. National centres should be established to diagnose and treat poisoning victims.

[The production and use of internationally prohibited chemicals including asbestos and certain halogen compounds should be restricted and phased out.]

Transnational corporations which export chemicals should adopt the same safety standards that apply in the countries in which they are based. [The exporting of chemicals whose use is banned in the country of origin should be prohibited.]

To regulate the use of dangerous chemicals and determine whether they should be imported, countries need to know about health and environmental risks. Governments and industries in exporting countries should provide that information; international organizations should help disseminate it.

Data is often insufficient to determine the risk associated with particular chemicals. Assessments should be completed by the year 2000 on 500 of the most widely used chemicals, including all major pollutants. Guidelines, including exposure limits, should be issued. More than 100,000 chemicals are in use but only 1,500 are used in 95 per cent of all production.

The cause-effect relationship between chemical exposure and certain diseases should be studied. Research methods that reduce the use of animal testing should be developed.

Uniform international standards are needed for classifying the safety of chemicals used in the workplace or home. International organizations should develop an appropriate labelling system but should not create unjustified trade barriers.

The annual cost of regulating toxic chemicals worldwide is estimated at $500-600 million. Developing countries will need $100-$150 million in international financing. International efforts to assess chemical risks, develop a labelling system and support the exchange of information will require another $43 million.

REDUCING AND CONTROLLING TOXIC WASTES

(Section II, Chapter 12 of Agenda 21; document A/CONF.151/PC/100/Add.24)

Reducing the production of dangerous industrial wastes and improving their safe handling and proper disposal are vital if human health and the environment are to be protected. Proposals in Agenda 21 address the need to control the generation, storage, treatment, transportation and disposal of hazardous wastes; the need for international support for developing countries so they can deal with these wastes; and the elimination or reduction of transboundary waste shipments.

Incentives are proposed to prevent or minimize the production of dangerous wastes. Cost-effective, cleaner production methods should be introduced. Biotechnology or other substitutes for hazardous substances will be encouraged. [Developed-country Governments are asked to provide incentives to businesses to transfer low-waste production technology and information to developing countries.]

[The production of chemicals whose use is banned or restricted should be phased out. More research should be undertaken to find alternatives.]

Techniques need to be developed for recovering useful material from waste products and using it in new ways. Recycling should be promoted. Unavoidable and dangerous industrial waste should be treated at or near its source. Treatment and disposal processes should be combined, where possible. Polluters should pay for disposal of wastes and clean-up of contaminated areas.

Governments, with international assistance, should introduce pollution standards and controls, and create the infrastructure needed to enforce them. Surveys should determine where waste is produced. Research should be undertaken on the nature of hazardous waste material and its impact on health, the environment and the economy. Action must be taken to protect people living near dangerous waste sites.

Countries should be able to dispose of their own toxic waste (assuming that such material can be disposed of in an environmentally sound manner). Movement of hazardous wastes across boundaries should be regulated under international standards and agreements.

[The export of wastes to developing countries that cannot meet treatment and disposal standards as stringent as those in the country of origin should be prohibited.] [Governments will be urged to pass laws that impose severe punishment for persons engaged in illegal waste traffic.]

Programmes to minimize the production of dangerous wastes and their disposal will cost an estimated $18.5 billion per year. About $1.2 billion from international sources is needed annually to help developing countries build safe waste-management capacity.

SOLID WASTE AND SEWAGE

(Section II, Chapter 13 of Agenda 21; document A/CONF.151/PC/100/Add.25)

Urgent action is required to control the rapidly growing volume of industrial and household garbage and human sewage. The amount of municipal waste produced worldwide is expected to double by the end of the century, and to double again before 2025.

Proposals in Agenda 21 include: changing the patterns of production and consumption in order to minimize solid waste and recycle more of it; safe disposal of rubbish and sewage sludge; and provision of sanitation services for millions of people who have none.

National programmes should aim to stabilize or reduce waste, by reducing the amount produced and increasing the proportion that is recycled. [Industrialized countries should have programmes in

place by 2000; developing countries should work towards that goal, without jeopardizing their development prospects.]

Businesses should be encouraged to change product designs, employ cleaner production methods, and use refillable or recyclable packaging. Governments will be asked to help create markets for recycled materials, and to take steps to reduce the loss of food and other perishable goods during transport and storage.

Also proposed: pilot projects to promote recycling, including a model programme to recycle paper used in the UN system; technical assistance to developing countries; and transferring technologies such as machinery for reusing plastics to developing countries.

Governments should review policies, set up monitoring systems and introduce regulations, taxes and incentives that will lead municipal authorities and companies to waste less and recycle more. Public consciousness should be raised in the schools and by mass media campaigns.

The treatment and safe disposal of an increasing proportion of solid wastes, including sewage, should be undertaken. In the industrialized countries this will involve avoiding the discharge of sludge at sea.

In the developing countries, less than 10 per cent of urban waste receives any treatment and only a small fraction of that meets any quality standards. Aided by international scientific guidelines, all countries need to establish disposal standards based on the local capacity of the environment to assimilate the waste produced. [It is unacceptable to export solid waste, or dispose of it in areas not subject to State sovereignty.]

Waste disposal considerations, including landfill locations, should be part of planning for new residential areas.

By the year 2000, over 2 billion people will be without access to basic sanitation services, including half the urban population in developing countries. The impact on human health of the lack of such services is severe; some 4 million children under age 5 die each year from water-related diseases.

Adequate waste services should be provided to all city dwellers [by 2025], and to all rural people [by 2050]. Priority should be given to all communities now lacking any such services, regardless of their legal status.

New approaches have to be developed for the collection, storage and disposal of waste from concentrated settlements. Low-cost methods should be used wherever possible; regulations should be changed to permit their use, if necessary.

In general, fees charged for waste services should reflect the cost of disposal in order to encourage polluters to change their practices.

The estimated annual cost of proposals for waste reduction and disposal is $8.4 billion; $1.85 billion will be required from international sources. (The costs of proposals for fresh water, sanitation and the management of toxic wastes are considered separately.)

SAFE HANDLING AND DISPOSAL OF RADIOACTIVE WASTE

(Section II, Chapter 14 of Agenda 21; document A/CONF.151/PC/100/Add.4)

Minimizing the dangers posed by the world's growing volume of radioactive waste requires ever more vigilance in enforcing international safety standards. To protect human health and the environment, safe management and disposal of radioactive waste should be an integral part of worldwide nuclear safety efforts.

By 1995, some 481 billion cubic metres of low- and intermediate-level radioactive waste will be generated annually. About two thirds will be produced in the industrialized countries of Western Europe and Japan, and one third in Eastern Europe and the developing countries. The main sources are nuclear power generation (which also produces high-level waste and spent fuel), medical centres, research institutions, mines and industrial facilities.

Efforts to [minimize the generation of radioactive waste and] ensure that waste is safely handled, stored, processed, transported and disposed of should be supported. Developing and applying safety standards is advocated, as is transferring to the developing countries technology needed to safely manage and dispose of such waste. Governments should not accept radioactive waste unless proper safeguards are in place.

Existing international agreements on the safe transboundary movement of radioactive waste should be adhered to; [legally binding measures on liability, compensation and compulsory insurance should be considered.]

The sovereign right of each country to prohibit the import or transit of radioactive waste is well-established. A number of countries, notably in Africa, have done this. [Regional agreements prohibiting the import of radioactive and other hazardous waste should be respected.]

There is, currently, a voluntary moratorium on the disposal of radioactive waste at sea. Under Agenda 21, countries will [propose] [or] [urge completion of studies on whether to introduce] a legally binding ban. [It will also seek a prohibition on disposing radioactive waste in or under the seabed unless scientific evidence shows this poses no risk to the environment.]

International organizations will need an estimated $8 million a year to promote research, develop regulations and support developing countries' efforts to safely manage radioactive waste.

PARTNERS FOR SUSTAINABLE DEVELOPMENT

(Section III, Chapters 1-9 of Agenda 21; document A/CONF.151/PC/100/Add.13)

Building environmental and economic security requires a social partnership that makes use of contributions of all peoples and assures that each will share the benefits. Agenda 21 will address the need to involve nine major groups in all programme areas covered by Agenda 21. These nine groups are: women; youth; indigenous peoples; non-governmental organizations; local authorities; trade unions; business and industry; the scientific and technological community; and farmers.

To assure the full, equal participation of **women** in all development activities, it is proposed that all governments increase the number of women in decision-making, technical and field positions. By the year 2000, national reviews should be held of the legal, cultural, educational and attitudinal obstacles faced by women in public life, and of ways to remove those obstacles.

Proposals in Agenda 21 include: eliminating female illiteracy, expanding the enrolment of women and girls at all levels of schooling, and revising curricula to eliminate gender stereotypes. Measures to reduce women's workload, improve maternal and child health, and establish day care centres and other services to support equal employment opportunities for women are also proposed.

Young people need to participate actively in decisions that will determine their future. Every country should, by 1995, involve youth in planning development and resource management at the national, regional and local levels. There should be youth positions in governments, youth advisory councils, and youth conferences on social and economic issues. Secondary education and vocational training should be made more widely available. By 1999, more than half of each country's youth should have access to such programmes. Training should impart environmental awareness and skills necessary for sustainable development.

Most **indigenous peoples** have a special relationship to the environment in their ancestral territories. They should be empowered to participate in formulating and implementing laws and policies on resource management and development. Government mechanisms for consultation, collaboration and cooperation with indigenous peoples are advocated. International conventions on indigenous rights should be ratified and complied with, and legal instruments to protect traditional knowledge related to the environment should be developed.

International, national and local **non-governmental organizations** (NGOs) possess a wealth of experience that should be utilized in environment and development efforts. Proposals suggest greater cooperation and communication among Governments and various NGOs, to help unite all sectors of society in support of UNCED's goals.

Each **local authority** will be asked to adopt a local version of Agenda 21, in consultation with citizens' groups and other organizations. Local planning, policies and regulations for resource use should be designed to achieve sustainable development. Environmental awareness should be built at the household and community levels.

Trade unions are critical to any reorientation of development policies. Unions have experience in dealing with industrial change and in promoting environmental protection, safe workplaces and full employment. To ensure workers' participation, Governments and employers should recognize employees' right to organize unions.

Other proposals call for: measures to reduce occupational accidents, injuries and diseases, and to increase workers' education, training and retraining; and the passage of right-to-know laws ensuring workers have the information needed to participate effectively in decision-making.

Business and industry, which play a crucial role in each country's economic development, are also key in protecting the environment and human health. They are encouraged to use cleaner processes and technologies at all stages of production, to preserve resources and minimize pollution and waste.

A mix of regulations and economic incentives should be advocated to encourage businesses to operate responsibly, efficiently and with a view to the future. Recognizing the value of entrepreneurship in developing innovative production methods, efforts to increase the number of private enterprises that use resources rationally should be supported.

Agenda 21 will promote improved coordination between the **scientific and technological community** and decision-makers. Internationally accepted ethical principles and guidelines governing science and technology in relation to the environment and development should be developed by the year 2000.

Subsistence **farmers** are the stewards of much of the land. Increasing their influence in decision-making (by promoting decentralization and strengthening local and village organizations) will contribute to sustainable development. Women's right to own land should be given greater legal recognition. Training and economic incentives to encourage the use of low-cost, low-energy farming practices and technologies that increase land productivity in a sustainable way should be promoted.

MAKING ENVIRONMENTALLY SOUND TECHNOLOGY AVAILABLE TO ALL

(Section IV, Chapter 2 of Agenda 21; document A/CONF.151/PC/100/Add.9)

To develop in a sustainable manner, developing countries need access to technology that preserves the world's resources. Facilitating the transfer of such technology and helping countries make the best use of it, are two of the proposals in Agenda 21.

While no production is waste-free, "environmentally sound" technology refers, in general, to production methods that are less polluting than previously used methods, consume less energy and fewer resources, and recycle wastes or handle them more acceptably.

Some examples are:
- Heat controls and insulated pipes that make energy plants more efficient.
- Processes to remove pollutants from raw materials before production, or (generally more expensive) from wastes before they are discharged.
- Cooling agents that do not use ozone-depleting chlorofluorocarbons.
- Use of renewable energy sources (biomass, solar and wind power).

The transfer of both patented and public domain technical information should be promoted and financed. Countries should be supported in developing their technological capacities.

Regional clearinghouses should be established to disseminate information on technologies used in agriculture, industry and energy production. Terms under which technology may be acquired should be agreed upon.

The transfer of patent-protected processes to developing countries should be expedited. One proposal is for the purchase of [appropriate] [environmentally [safe and] sound technology] patents for their transfer to developing countries on non-commercial terms [as part of aid packages].

Other proposals are to:

-- [Purchase patent licences on commercial terms for their transfer to developing countries on non-commerical terms.]
-- [Facilitate the transfer of intellectual property rights between countries where such action is essential to the success of a project.]
-- [Facilitate the transfer of appropriate technologies including intellectual property rights to the developing countries in various modalities as part of aid activities.]

To help establish a long-term partnership between the transnational companies that supply technology and its users, joint ventures and licensing agreements, as well as direct foreign aid and investment, should be promoted. Innovators deserve fair compensation as an incentive to further research and development. [Where mutual agreement cannot be reached on technology transfer, compulsory means of acquiring it may be proposed.]

Governments should adjust tax, regulation and subsidy policies to create impetus for the use of environmentally sound technology. Countries should be helped with training, and assisted in other ways to safely manage on their own the use of new technologies, especially those that are restricted in their countries of origin.

A rough estimate of the international financing needed to promote the transfer of environmentally sound technology is $550-$700 million per year.

SCIENCE FOR SUSTAINABLE DEVELOPMENT

(Section IV, Chapter 3 of Agenda 21; document A/CONF.151/PC/100/Add.10)

Sustainable development requires taking a long-term view based on the best scientific knowledge available, being prepared for surprises and linking knowledge to global policy. Science, applied to policy and planning, can provide a path toward sustainable development.

Proposals in Agenda 21 present a framework for learning about the carrying capacity of the earth before it is too late to avoid human suffering. The global environment is changing more rapidly than at any time in recent history. The next century may see environmental conditions unprecedented in the last ten millennia.

Today, the sciences can use new tools such as remote sensing devices, robotic monitoring, and computing and modelling capability to understand the ecosystem and how it is likely to respond to the many changes taking place.

Proposals include: building a stronger scientific basis for sustainable development (includes improving the research capacity of developing countries); enhancing scientific understanding; improving long-term assessment; and building scientific capacity. A worldwide monitoring network focusing on the earth's systems is required. Priorities for research should be established: science should be more directly connected to sustainable development issues like health, education, social welfare, the environment and the economy.

Scientific findings should be linked with the knowledge of indigenous cultures. Findings must be compared from country to country. Research systems should have the ability to monitor and compare data worldwide and predict short and long-term responses to man-made and natural disturbances, population changes and environmental degradation.

Local or national activities often have an impact on global environmental changes. Ozone depletion is one example. Over the long term, the knowledge acquired would make it possible to evaluate the situation at local, regional and national levels and construct a range of possible futures.

A commitment to training and educating scientists worldwide is essential. There is a need for scientists who understand environment and development issues, in addition to their own disciplines.

Science and technology data bases and information networks must be expanded and put into unified formats and systems for easy access. Indigenous knowledge must be included. New partnerships and networks of scientists and organizations must be formed to exchange the global knowledge that is being collected.

Annual costs for the four major proposal areas between 1993 and 2000 are estimated:

-- Strengthening the scientific base: $40 million, with $15 million coming from international assistance.
-- Enhancing scientific understanding: $1 billion, with $750 million in international financing.
-- Improving long-term assessment: $35 million, with $18 million from international sources.
-- Building capacity: $750 million with $470 million from international sources.

PROMOTING ENVIRONMENTAL AWARENESS

(Section IV, Chapter 4 of Agenda 21; document A/CONF.151/PC/100/Add.6)

Our future depends on teaching people to use the earth's resources in a sustainable way. Environmental education should be part of every student's course of study, even those at the most basic level. Proposals in Agenda 21 to promote environmental awareness include:

-- National reviews of curricula in the next three years, to incorporate environmental topics. Environmental training for teachers and school administrators.
-- Student studies of regional ecosystems, linked to research and field activities in national parks and wildlife reserves.
-- Interactive teaching, using modern and traditional media, including video, music and theatre.
-- Cross-disciplinary university courses in all fields that have an environmental impact.
-- Adult education programmes based on local problems related to the environment and development.
-- An emphasis on creating educational opportunities for women -- by eliminating enrolment barriers and removing gender stereotypes from curricula -- and for indigenous people.

A wide-ranging public relations campaign is needed to change people's thinking in ways that reward environmentally sound behaviour, and promote sustainable consumption patterns and lifestyles.

Popular educational materials should present the best available scientific information in easily understandable terms. All available forms should be used: television and radio spots, mobile audiovisual units in rural areas, street theatre and other folk media.

Governments should promote ecological tourism, making use of national parks and protected areas. A flexible, adaptable workforce that can address environmental problems (including emergencies) and other changes related to development should be created.

Environmental considerations should be part of training for all relevant vocations, including management positions at all levels. Environmental technicians should be locally recruited and trained to serve communities' needs. Access to this training should be available to women and men, and to people of all races and religions.

The estimated annual cost of programmes to meet the needs for public awareness outlined in Agenda 21, including goals related to universal education that the United Nations has already endorsed, is between $14 and $15 billion, $4.5 to $5.5 billion of which would have to come from international sources.

BUILDING NATIONAL CAPACITY FOR SUSTAINABLE DEVELOPMENT

(Section IV, Chapter 5 of Agenda 21; document A/CONF.151/PC/100/Add.11)

Economic development that is environmentally sustainable is not possible without trained personnel, scientific and technological capacity and effective institutions.

To help developing countries attain the expertise to implement the proposals in Agenda 21, measures for national capacity-building are included in all programme areas. Specific related issues, including technology transfer and education, have their own chapters.

Each country should formulate its own policies, choosing development options that reflect its environmental limits and its people's needs. Technical cooperation should be managed by the developing countries themselves, and driven by demand rather than supply. The goal should be programmes that respond to new long-term challenges, rather than concentrating on immediate problems.

The international aid process as it relates to technical expertise for sustainable development should be reviewed by the United Nations, donor and recipient countries, and public and private organizations. The United Nations Development Programme (UNDP) should take the lead in mobilizing international funding in this area.

Technical aid to developing countries will cost about $15 billion annually, one fourth of total development assistance. Implementing Agenda 21 will require more effective use of these funds, as well as additional funding in specific areas. A proposed new UNDP-coordinated funding mechanism, to act as a catalyst for other financing, will require $300 million a year, increasing over five years to $1 billion annually.

REGIONAL COOPERATION ON ENVIRONMENT AND DEVELOPMENT

(Section IV, Chapter 7 of Agenda 21; document A/CONF.151/PC/100/Add.26)

Environmental problems are not confined within national boundaries. Consequently, nearly all programme proposals in Agenda 21 include calls for regional research centres, data collection, information exchange and consultation to harmonize strategies and policies.

Agenda 21 spells out some of the forms that regional coordination and cooperation should take. Existing regional economic organizations should strengthen the environmental component of their programmes. Regional environmental organizations need to put more emphasis on developmental issues.

To avoid duplication of efforts, United Nations programmes, the World Bank, regional banks, and bilateral aid agencies should cooperate more closely with regional organizations. The UN regional economic commissions, the UN Environment Programme and the UN Development Programme (UNDP) should take special responsibility for promoting this cooperation. UNDP should take the lead in coordinating global actions for sustainable development.

BRIDGING THE DATA GAP

(Section IV, Chapter 9 of Agenda 21; document A/CONF.151/PC/100/Add.12)

The developing world has much less access than developed countries to information needed to make informed decisions about the environment and economic activities, and the gap is growing. Many developing countries lack sufficient capacity to collect, assess and disseminate data. Commonly used economic indicators such as gross national product do not reflect the environmental sustainability of development processes.

To ensure that planning is based on reliable, pertinent information, a number of measures to strengthen data collection for sustainable development are proposed in Agenda 21. Appropriate indicators need to be developed and monitored globally.

Earthwatch, the United Nations environmental data programme, should expand its efforts to monitor urban air quality, freshwater, land resources (including forests and rangelands), soil degradation, biodiversity and the global atmosphere. Countries should take inventory of environmental resources.

International funding needed to improve the collection and assessment of data is estimated to be $1.9 billion per year.

Steps to make information more accessible to those who need it -- from the level of senior decision-makers to individuals at the grass roots -- should be taken. In many countries, even when data exists, it is not stored, organized or assessed properly because of technical and other shortcomings. Proposed steps to improve information handling and communication include better identification of users' needs, establishing standard data formats, and electronic networking.

About $130 million per year will be needed for technical cooperation to strengthen country and international programmes in the information field, and $35 million for related activities by international organizations.

FINANCIAL RESOURCES AND MECHANISMS

(At a later stage in negotiations, this item will be integrated into the draft Agenda 21 as Section IV, Chapter 1. The current document symbol is A/CONF.151/PC/101.)

For the first time in history, a global agenda has been proposed for linking economic development to environment issues with the goal of bringing about sustainable development. The costs of implementing the agenda have been projected for the period 1993-2000.

Investment by individual nations is expected to be four to five times greater than funds required from the international community. International funding is required for:

- Increased international concessional financing to accelerate development. Estimated at $125 billion annually.
- Financing for programmes to address global issues. Estimated at $15 billion annually.
- Funding to strengthen international organizations so that they can play a larger global environmental role. Estimated at $750 million annually.

Estimating the cost of programmes that are in a conceptual stage is difficult. Negotiations on specific environmental programmes are under way and may affect the estimates. Not acting on Agenda 21 also carries a cost: serious problems may appear in many areas, including health. Failure to act now narrows choices for future generations.

For comparison purposes, during the 1980s development assistance from all sources amounted to some $55 billion annually. Most came from industrialized countries, members of the Organisation for Economic Cooperation and Development (OECD).

In industrialized countries, from 1 to 3 per cent of gross domestic product (GDP) has been devoted to cleaning up the environment; 5 to 8 per cent has been spent on defense. An increase in levels of official development assistance (ODA) from 0.35 per cent to 1.0 per cent would produce about $150 billion annually in concessional assistance.

One proposed method for raising funds is to establish an "Earth Increment" to support the global partnership for environmental programmes. Changing the structure of organizations and methods can also release funds. The Global Environment Facility was set up in 1991 to provide funding for ozone layer protection, limiting emissions of greenhouse gases, protecting biodiversity and protecting international waters. There is no agreement on whether its mandate should be expanded or whether alternative Funds should be set up.

Developing countries must play an expanded role, based on planning for sustainable development. Benefits flow to all parties, whether the source or recipient of funding.

STRENGTHENING INSTITUTIONS FOR SUSTAINABLE DEVELOPMENT

(At a later stage in negotiations, this item will be integrated into the draft Agenda 21 as Section IV, Chapter 6. The current document symbol is A/CONF.151/PC/102.)

It is proposed that existing institutions must be modified and strengthened in order to accomplish the work agreed to at the Earth Summit. New institutions may also be created. Agenda 21 will contain proposals for implementing its recommendations concerning technical cooperation, policy-making, coordination, finance and administration, and for implementing international laws.

Proposals address the role of institutions for environment and development within the United Nations, follow-up arrangements after the Summit; and the relationship of the UN system with other institutions.

It is generally agreed that no new institutions should be created unless absolutely necessary. The United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) should be strengthened, to provide the technical and operational assistance and coordination necessary to implement Agenda 21.

Areas that need additional or new efforts are: strengthening regional organizations involved in development and environment activities; creating an agency to take responsibility for energy management; increasing environment monitoring and assessment capability; and developing an environment early-warning system.

It is proposed that UN coordination might involve the Secretary-General, the Administrative Committee on Coordination, the UN Director-General for Development and International Economic Cooperation and, possibly, a new environmental coordinating body.

The Second Committee of the General Assembly, assisted by the Economic and Social Council (ECOSOC), could deal with policy-making on environment and development. Changes in existing UN committees on energy, natural resources and science and technology are proposed, as is a new Commission on Sustainable Development.

A Global Environment Facility for handling financial matters has been proposed. A pilot programme has been set up by the World Bank, UNDP and UNEP. Its mandate is limited to providing funding for ozone layer protection, limiting emissions of greenhouse gases, protecting biodiversity and protecting international waters. The scope of operations and decision-making could be altered. Setting up a new and separate Sustainable Development Fund ("Green Fund") has also been proposed and has received some support.

Administration and implementation of international law will require expanded roles for UNEP and the International Court of Justice.

Proposed follow-up after the Summit includes: holding a conference every five years to update Agenda 21; setting up an Earth Council (elections to be held at the Summit); establishing a UNDP/UNEP coordinating committee; and establishing the United Nations Conference on Environment and Development (UNCED) as a commission or council.

Proposals were supported for the broad involvement of groups representing women, youth, industry, scientists, trade unions, local authorities and NGOs.

SURVEY OF INTERNATIONAL AGREEMENTS AND INSTRUMENTS

(At a later stage in negotiations, this item will be integrated into the draft Agenda 21 as Section IV, Chapter 8. The current document symbol is A/CONF.151/PC/103.)

International agreements and other legal instruments form the basis of progress on issues related to environment and development. A survey of more than 100 exisiting United Nations legal agreements has been made, in order to include in Agenda 21 proposals for improving their implementation.

Of 100 agreements, fewer than half are open to global membership: 52 are regional or sub-regional in scope, including the 1959 Antarctic Treaty and the 1978 Treaty for Amazonian Co-operation. Several older agreements involve only industrialized nations. Others, such as the Montreal Protocol on Substances that Deplete the Ozone Layer, address global problems and wide participation is sought.

Proposals for implementing Agenda 21 focus on participation, monitoring, implementation and follow-up. The force of documents that are not agreements, but which attach funding for meeting set standards, is recognized.

Participation in conferences -- and in the subsequent reporting called for by agreements -- has been weak among developing countries. The costs of participating and establishing the reporting systems are a major factor and must be provided for under the agreements themselves.

Several factors affect implementation. Agreements are often written in general and abstract terms, making it difficult to evaluate achievements. Measurement objectives and compliance mechanisms must be made clear.

Implementation breaks down where monitoring and follow-up are called for in agreements but never take place. Such agreements may appear to have broad support but actually have little impact. Fewer than one third of the reports requested by an agreement on pollution from ships are actually submitted, for example. Reporting is better when based on internationally agreed formats and on schedules with recurring deadlines.

Excessive use of reservations or exceptions to the terms of agreements is another obstacle to implementation. The more effective agreements prohibit reservations or make them subject to unanimous approval by all parties.

Several new conventions and protocols are currently being prepared, but there is no formal method for coordinating efforts. Combining administrative and support services, where agreements are interrelated, would streamline the agreement process.

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